**Table 5**
**Data for Listed CLECs in Sample**

| Firm | Network Type | Customer Type | Reciprocal |
|---|---|---|---|
| *Adelphia* | Resale and On-net | Business | Yes |
| *Allegiance* | UNE | Business | |
| *Allied Riser* | | Business | |
| *Advanced Radio* | | Business | |
| *Avista Corporation* | | Combination | |
| *US LEC Corp* | UNE | Business | |
| *CoreComm Ltd.* | Resale | Combination | |
| *Convergent* | | Business | |
| *Covad* | UNE | Combination | |
| *CapRock* | Resale | Business | |
| *CTC Communications* | Resale | Business | |
| *Electric Lightwave Inc.* | On-net and UNE | Business | |
| *Focal* | UNE | Business | Yes |
| *GST* | On-net and UNE | Business | |
| *ICG Telecommunications* | On-net and UNE | Business | Yes |
| *Intermedia* | UNE | Business | Yes |
| *Inter-Tel Inc.* | | Business | |
| *ITC DeltaCom Inc.* | UNE | Business | |
| *McLeod USA Inc.* | UNE and Resale | Combination | |
| *Metromedia* | | Business | |
| *Mpower* | UNE | Business | |
| *Network Access* | UNE | Business | |
| *Network Plus CP* | UNE | Business | |
| *NorthPoint* | | Combination | |
| *North Pittsburgh* | | Combination | |
| *Net 2000* | UNE and Resale | Business | |
| *Net2Phone* | | Business | |
| *Primus* | | Combination | |
| *RCN Corp.* | On-net and Resale | Residential | |
| *RMI.Net* | | Resident | |
| *RSL* | | Business | |
| *Rhythms* | UNE | Business | |
| *SpeedUS.Com* | | Combination | |
| *Teligent Inc.* | On-net | Business | |
| *Telocity* | | Residential | |
| *Time Warner TLC* | On-net | Business | |
| *World Access* | | Business | |
| *Winstar Communications* | On-net/UNE | Combination | |
| *XO Communications* | On-net/UNE | Combination | |
| *ZTEL* | Resale | Residential | |

Sources: "Telecom Services—CLECs," *Credit Suisse First Boston,* (June 5, 2001) at 19; "Telecom Services—CLECs," *Credit Suisse First Boston,* (April 11, 2001) at 18; "Analysis of Local Exchange Service Competition in New York State," *New York State Public Service Commission,* (December 31, 1999); "Broadband Barometer," *Merrill Lynch*, (July 3, 2000), at 4; Company Websites, and SEC Filings.

## A. Empirical Analysis of Individual CLECs

In Appendix 1, I provide a detailed empirical "regression" analysis of CLEC performance. Given that most of these companies are in an early stage of development, it would be pointless to focus on their profitability. Moreover, the market's assessment of

their likely future as reflected in their stock prices has shown wild swings in the past two years as Table 2 showed. Therefore, to gauge the initial success of each CLEC, I examined how it translated investment in fixed assets into revenues. Specifically, I estimated the relationship between revenues in each quarter and fixed assets in the previous quarter. The successful firms should be enrolling customers and realizing revenues as they deploy their networks. Those that fail to attract customers as rapidly are obviously more likely to fail to satisfy investors that they should continue to fund negative cash flows.

The results of this initial analysis may be gauged by the relative size of the coefficients in Table 6.[47] For example, McLeod, Time Warner, RCN, and Intermedia have positive values, suggesting that they are successful in generating increases in revenues through the addition of fixed assets. However, Rhythms, Covad, NorthPoint, and Teligent have very large negative values, which means that their ability to generate revenues from asset expansion is less than the trend rate in the sector. The latter firms are either in bankruptcy or very close to bankruptcy, while the former are in a much more solid condition. Even though these more successful firms have suffered a decline in market capitalization, they continue to grow and to invest in facilities.

**Table 6**

**The Relative Success of Individual CLEC's in Deploying Capital**

| | |
|---|---|
| *Adelphia Business Solutions* | 0.372 |
| *Allegiance Telecom Inc.* | -0.007 |
| *Allied Riser* | -0.132 |
| *Advanced Radio* | -0.219 |
| *US LEC Corp* | 0.027 |
| *CoreComm Ltd.* | -0.003 |
| *Convergent* | 0.057 |
| *Covad* | -0.023 |
| *CapRock* | 0.051 |
| *CTC Communications Corp.* | 0.046 |
| *Electric Lightwave Inc.* | 0.004 |
| *Focal Communications.* | 0.018 |
| *GST Telecommunications* | 0.021 |
| *ICG Telecommunications* | 0.041 |
| *Intermedia Communications* | 0.065 |
| *Inter-Tel Inc.* | 0.105 |
| *ITC DeltaCom Inc.* | 0.036 |
| *McLeod USA Inc.* | 0.088 |
| *Metromedia* | -0.025 |
| *Mpower* | -0.021 |
| *Network Access* | -0.083 |
| *Network Plus CP* | 0.036 |
| *NorthPoint* | -0.063 |
| *North Pittsburgh* | -0.005 |
| *Net 2000* | -0.047 |
| *Primus* | 0.103 |
| *RCN Corp.* | 0.034 |
| *RMI.Net* | -0.011 |
| *RSL* | 0.124 |
| *Rhythms* | -0.090 |
| *SpeedUS.Com* | -0.351 |
| *Teligent Inc.* | -0.091 |
| *Telocity* | -0.151 |
| *Time Warner TLC* | 0.026 |
| *World Access* | 0.054 |
| *Winstar Communications Inc.* | -0.051 |
| *XO Comm. (Nextlink)* | 0.027 |

*Note: Avista is not included in this analysis because it is impossible to separate telecom revenues from revenues of other operations such as electric and natural gas.*

47. The full results are shown in the appendix in Table A-3.

## B. The Effect of Network Design and Customer Strategies

The first empirical analysis focused only on the *identity* of the CLEC. In this section, I report on the results that were obtained from a statistical analysis of the effect of network design and type of customer on the ability of an entrant to translate fixed capital assets into revenues. The results of this analysis, reported in the Appendix, provide strong evidence that building one's own network is the best entry strategy. Using UNEs to leverage fixed assets into revenues is much less successful in building revenues, and the use of resale -- on average -- produces very poor results.

Specifically, the statistical regression analysis shows that CLECs with their own networks are typically able to increase revenues 2.6 percentage point above the average rate of increase for every 1 percent increase in capital assets.[48] The use of a combination of their own networks with a substantial share of UNEs or resale generates a 1.4 percentage point increase above the average growth rate in revenues for every 1 percent increase in capital assets. However, using either UNEs or resale or a combination of the two to build its network results in much lower revenue growth. A principal reliance on UNEs generates only a 0.7 percentage point above-average revenue increase for each 1 percent increase in capital assets while resale and a combination of UNEs and resale provides almost no incremental boost in revenues. In short, a mixed strategy of using UNEs or resale, *in addition* to investment in a CLEC's own facilities, is far superior to relying on UNEs or resale by themselves.

Surprisingly, I find that there is no difference in performance between CLECs that target business customers and those that primarily serve residential customers.

Apparently, the few CLECs that address the residential market, such as RCN, do not systematically under-perform the vast majority of CLECs that target the business market, *all other factors equal.* Finally, reliance upon reciprocal compensation does not contribute significantly to revenue growth -- a surprising result given the limited effort required to obtain such revenues when terminating calls directed toward an ISP. The FCC's recent decision to revise and reduce reciprocal compensation rates has severely limited the success of this strategy.

These results provide strong support for the conclusion advanced above -- namely that the entrant's best strategy for growth is to build its own facilities. A few, such as McLeod, have succeeded with a resale and UNE strategy, and Intermedia has been relatively successful with a UNE-only strategy, but the statistical results suggest that building one's own network is likely to be the best way to build revenues. Of course, this does not guarantee that an entrant will ultimately become profitable and survive. Only time will provide the proof of long-term profitability.

These results provide no support for the notion that the inability to gain interconnection through UNEs or the transfer of resale customers has impeded CLEC growth. The results simply point out that building one's own network is likely the best platform strategy for long term revenue growth. Indeed, a mixed strategy of using UNEs or resale with one's own network appears to work relatively well, but simply relying on the ILEC's network appears to be a strategy that limits an entrant's growth. Just changing the nameplate on the service is not typically a very good strategy for attracting customers.

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48. These results are shown in Table A-5 in the Appendix. Note that the principal reliance on on-net facilities leads to very low *initial* revenue growth because of the time required to build one's own network. Thereafter, the revenue growth of on-net CLECs far outstrips that of their rivals.

## VI. WHO SUCCEEDED, AND WHY?

### A. The Most Successful CLECs

During the winter of 2001, many public CLECs' stocks were trading at prices in the single digits, and some firms were even filing for bankruptcy. Despite the problems of some firms, analysts have continued to view Allegiance Telecom, Inc., McLeod USA, Time Warner Telecom, and XO Communications as strong companies[49] and have stated that these companies are proof that CLECs can thrive and contribute to a competitive telecommunications marketplace. Furthermore, analysts have attributed these CLECs' performance to a "...deep knowledge of how to coordinate the physical and administrative change from former Bell company to new carrier."[50] These opinions seem well grounded, as certain CLECs have separated themselves from the rest of the pack over the past few years. Nevertheless, I believe that modifications to the above list are necessary to categorize the firms properly.

For reasons I describe below, it is clear that McLeod and Time Warner are the most successful CLECs, with Allegiance closely behind. XO is somewhat below the top three CLECs, along with Intermedia, a firm with a very successful Internet service.

The variation in CLEC revenue over time is the first indication of the differences in CLEC performance. Publicly traded CLECs reported average revenues of approximately $45 million in the first quarter of 1998. This figure increased to over $167 million by the third quarter of 2000. Clearly, some CLECs have been growing. Over this same period, however, the variation in CLEC revenues has increased substantially. In the

49. Neil Druker, *supra* note 10 at 30-32; and Riding up to the Challenge, *supra* note 10, at G14.
50. Riding up to the Challege, *supra* note 10, at G14.

first quarter of 1998, the standard deviation[51] of CLEC revenues was approximately $100 million, but the standard deviation increased to over $440 million by the third quarter of 2000. These numbers reflect the fact that not all CLEC revenues were growing at the same rate. Thus, some CLECs have established themselves as larger companies, with higher rates of expansion, while others remain relatively small.

Allegiance, McLeod, Time Warner, and XO have all performed well in this respect. They are all relatively large CLECs, the smallest being Allegiance with revenues of slightly more than $94 million in the fourth quarter of 2000, and all have had consistent revenue growth. Allegiance's revenues have increased by more than 400 percent since 1998 and by more than 70 percent since the fourth quarter of 1999. McLeod has grown over 100 percent since 1998, and over 32 percent since the end of 1999, boasting total revenues of over $410 million by the end of 2000 and consistent revenue growth of about 10 percent per quarter since 1998. Time Warner has seen its revenues increase by more than 170 percent since 1998, and over 28 percent since the end of 1999, while XO Communications has grown over 213 percent in revenue since 1998 and 91 percent since the fourth quarter of 1999.

Of the four firms listed above, it is clear that McLeod and Time Warner are the strongest firms. Both of these firms are fully funded, and have positive earnings before interest, taxes, and depreciation (EBITDA), although their business models are different. McLeod relies heavily on the resale of ILEC services, while Time Warner relies mostly on its own network. I classify Allegiance as a solid firm, but below the level of the above two, because it is not as mature as McLeod and Time Warner. For example, Allegiance

51. Standard deviation is a common statistical tool that measures the spread of the data. Higher numbers correspond to greater spread.

reported only $1.2 million in quarterly revenues early in 1998, while McLeod and Time Warner reported $155.7 million and $27.05 million respectively in the same period. Thus, Allegiance was growing quickly in 1998 and 1999, at least in part, because it was a small company in new markets. Allegiance stands out from many other CLECs in its sustained revenue growth through the year 2000, when some CLECs were having difficulties.

XO Communications has not been as stable as the other three firms. It has invested in some alternative network platforms, such as fixed wireless, which could prove extremely profitable in the long term, but these investments in unproven technologies place the company at greater risk in the short term. Further, XO has had, until recently, more trouble securing funding than the other three firms. For these reasons, I rate XO below McLeod, Time Warner, and Allegiance.

In addition to the above firms, Intermedia is a large firm with $1 billion in annual revenues derived from a mix of Internet, web hosting, local access and voice, and integration services. Intermedia experienced difficulties in December 2000, and its stock price fell to less than $3.7 per share after two quarters of stagnant revenues.[52] Since then, the company has rebounded, and its stock has rallied to over $17 per share at a time when most CLEC shares were under severe pressure.

Simply put, these CLECs appear to have understood the industry prior to entry, had well devised business models, and developed their networks with the intention of making themselves valuable to their customers. Below, I highlight the specific business strategies that have allowed these firms to succeed.

52. This figure was downloaded from Yahoo Finance.

### 1. McLeodUSA

McLeodUSA provides local service, long distance service, data service, and voice mail to residents and businesses. McLeod uses a combination of resale, UNE leasing, and new construction in order to serve its customers. While resale has not been a particularly rewarding strategy for most CLECs, McLeod has been able to take advantage of the resale of Centrex services (a bundled service to businesses that predates the 1996 Act in US West and Ameritech States) in order to expand service. McLeod has also been adding CLEC lines and installing its own switches. From the fourth quarter of 1998 to the first quarter of 2001, McLeod reported a 279 percent increase in its total access lines. Since the second quarter of 2000, resale lines as a percent of total lines fell from 70 percent to 67 percent[53], and since the fourth quarter of 1998, the number of McLeod owned switches increased from 7 to 50. Thus, the on-net portion of McLeod's network has increased along with the size of its network.[54] In addition, McLeod has expanded by purchasing CapRock Communications.[55]

### 2. Time Warner Telecom

Time Warner Telecom is a subsidiary of AOL Time Warner. During the first quarter of 1998, Time Warner Telecom reported revenues of approximately $22 million.[56] Revenues increased to over $173 million in the first quarter of 2001.[57] Individuals at Time Warner Telecom attribute the company's success to its ability to

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53. *See* "Telecom Services—CLECs," *Credit Suisse First Boston Corporation*, (June 5, 2001), 19 and "Telecom Services—CLECs," *Credit Suisse First Boston Corporation*, (September 12, 2000), 19.

54. Downloaded from McLeodUSA's website at (http://www.mcleodusa.com/html/ir/quarterlyreleases.php3)

55. George C. Ford, "McLeodUSA Buys Dallas, Texas-Based Fiber Optic Company to Increase Empire," *The Gazette(Cedar Rapids)*, (December 8, 2000).

56. Time Warner Telecom was not public in 1998. The 1998 revenue figure is taken from the company's U.S. Securities and Exchange Commission Form 10-Q, (May, 1999), which lists the first quarter 1998 figure.

maintain its strategy, adding that adopting new technology because it is "in vogue" can hurt a CLEC.[58] Time Warner has also engaged in prudent business and financial actions in order to improve the firm. First, Time Warner bought a bankrupt CLEC, GST Communications, for $690 million on January 10, 2001. The acquisition of GST was a sensible decision because it allowed Time Warner to grow in a calculated manner. Prior to January of 2001, Time Warner had been growing very methodically through the construction of its own facilities. In the first quarter of 2001, its total access lines were comprised of 81 percent of on-net lines and 19 percent resale lines,[59] and it offered service in 23 markets by December 2000.[60] Thus, the firm's strategy was to build its own network in major markets, taking advantage of large, regulated margins in those markets, while offering lower cost service with new technology.

When GST began to experience financial difficulties, Time Warner saw the acquisition of GST as an opportunity to expand at an accelerated rate and discounted cost. Prior to the acquisition, GST's network consisted of approximately 50 percent on-net lines, and 50 percent UNE lines, well above the industry average of 36 percent on-net lines.[61] Thus, GST had already taken the time and energy to build a large portion of their network. Furthermore, GST's operations covered 49 cities by the fourth quarter of 1999.[62] Time Warner was able to acquire a bankrupt company whose current network largely reflected what Time Warner would have built on its own years hence.

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57. Time Warner Telecom, *U.S. Securities and Exchange Commission*, Form 10-Q, (May, 2001).

58. Riding up to the Challenge, *supra* note 10, at G14.

59. "Telecom Services—CLECs," *Credit Suisse First Boston Corporation*, (June 5, 2001), at 19.

60. "Time Warner Telecom Expands Network to Columbus Suburbs," (December 11, 2000), Downloaded from Time Warner's website at (http://www.twtelecom.com/jsp/allnews.jsp).

61. "Telecom Services—CLECs," *Credit Suisse First Boston Corporation*, (September 12, 2000), at 19.

62. GST Telecommunications, *U.S. Securities and Exchange Commission*, Form 10-K, (March, 2000), at 3.

Another successful Time Warner strategy was its financing of the GST acquisition. Amid an increase of the value of Time Warner's stock in January of 2001, it sold shares in the firm to raise over $480 million. Furthermore, the demand for junk bonds was rising simultaneously with the value of Time Warner's stock, and the firm used this opportunity to sell $400 million of their junk bond holdings at attractive prices. Through these deals, the company paid for its purchase of GST and reduced the riskiness of its balance sheet.

### 3. Allegiance Telecom, Inc.

Allegiance Telecom, Inc. is a CLEC that offers "state-of-the-art telecommunications products - voice, data and Internet - all from a single source on one affordable bill."[63] Allegiance began operations out of Dallas, TX in 1998, and filed its first form 10-Q with the U.S. Securities and Exchange Commission after the first quarter of 1998, reporting revenues of approximately $1.2 million. Since that time, its revenues have grown to over $94 million in the fourth quarter of 2000,[64] and the company has expanded its operations to the top 28 markets in the United States.[65] Furthermore, analysts predict that Allegiance has obtained sufficient investment funding to sustain it until it begins to report positive earnings.[66] As a result, analysts view Allegiance as one of the top CLECs in the industry.[67]

One of the keys to Allegiance's success has been its strategic use of the existing ILEC network in building its own network. Allegiance leases last mile access lines from

63. Downloaded from Allegiance's website at (http://www.algx.com/about_main.php).
64. Allegiance Telecom, Inc., U.S. Securities and Exchange Commission Form 10-Q, (November 14, 2000), 4.
65. Downloaded from Allegiance's website at (http://www.algx.com/news/san_antonio.php)
66. Neil Druker, *supra* note 10, at 31.
67. Riding up to the Challenge, *supra* note 10, at G14

ILECs, and then builds its own equipment on either side of the last mile line.[68] Leasing last mile lines (UNEs) can accelerate growth in service deployment, and quicken the development of a customer base when the CLEC first starts operation. In addition, building equipment on either side of the last mile line can significantly improve service and lower cost because some ILEC components can be outdated and unreliable. Thus, when Allegiance leases a network component from the ILEC, the company also installs new cost-effective components in order to improve product quality and lower costs.[69] Thus, Allegiance has succeeded *not* by repackaging and reselling ILEC services; rather, Allegiance has solidified its presence in the telecommunications industry by upgrading and improving the ILEC network in order to offer customers cheaper service with superior quality.

## B. The Second Tier of CLECs

McLeod and Time Warner are clearly leading the CLECs, and Allegiance is not far behind. In addition to these three firms, there are other CLECs that are successful, but at least presently, to a lesser degree. Two of these firms are XO Communications and Intermedia. Both firms have been successful in portions of their operations, but less successful in others, accounting for their rating in the second tier of CLECs.

### 1. XO Communications (Formerly Nextlink Communications)

Nextlink Communications was a CLEC providing Internet access to small and medium sized businesses through a fixed wireless network. From the first quarter of 1998 to the fourth quarter of 1999, the firm's revenue increased from approximately $26.5

68. Neil Druker, *supra* note 10, at 31.
69. *Id.*

million to approximately $90 million.[70] Furthermore, Nextlink's network contained 26 percent on-net lines and 74 percent UNE lines in the second quarter of 2000.[71] Thus, the firm was not relying wholly on ILEC elements in order to provide service. The aggressive nature of its expansion set Nextlink apart from other CLECs.

First, Nextlink invested in LMDS spectrum licenses so it could supply customers with service via a fixed wireless technology. Through this technology, antennas are placed on the customer's roof, and signals are then sent to a hub station. The advantage of wireless is that the last mile access problem can be avoided, and installation is quicker (approximately 5 days as opposed to 30 days with wireline installation).[72] In January 2000, Nextlink announced the purchase of Concentric Network Corporation. This acquisition allowed Nextlink to expand its local and long distance telephone service to provide high-speed Internet connections for business.[73]

Nextlink, which became XO Communications shortly after acquiring Concentric, was able to expand from 49 markets in early 2000 to 60 by February of 2001, and it even expanded telephone service to Canada and Europe. Furthermore, XO Communications states that it has always procured the requisite funding 12 to 18 months prior to any expansion in order to maintain the strength of the company.[74] This allows XO to continue its aggressive approach to expansion, which is one reason why it is viewed as a solid competitor.

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70. Nextlink Communication, *U.S. Securities and Exchange Commission*, Form 10-Q and 10-K, (May, 1998 and March 2000).

71. "Telecom Services—CLECs," *Credit Suisse First Boston Corporation*, (September 12, 2000), at 19.

72. Last Mile is Longest, *supra* note 31, at SR16.

73. "Nextlink Pays $2.9 Billion for Concentic Network," *The Buffalo News, City Edition* (January 10, 2000), 1C.

74. Riding up to the Challenge, *supra* note 10, at G14.

XO's rapid expansion, however, caused it eventually to fall behind in required funding. The company did have problems in gaining new sources of finance early in 2001, but it recently procured sufficient funding to continue into the year 2003.[75] XO's long-term value will depend in part on whether its wireless network proves as effective in transferring data as the more conventional fiber networks. If so, XO's assets will add substantial value to the industry well into the future. If not, then the firm's value will be downgraded. XO's strength is shown by the fact that it can still obtain funding from a financial market that has shown considerable skepticism toward telecommunications firms. Its somewhat unconventional network choice (which could more than pay off in the long term) and its somewhat overzealous expansion plans make it a less vibrant firm than the three described above.

### 2. Intermedia

Intermedia is being purchased by World Com.[76] Intermedia has struggled even though it has consistently been able to effectively deploy new capital assets to produce revenue (see Table 6). Its success derives largely from its 54 percent ownership of the valuable web hosting company, Digex, which has contributed substantially to its recent growth in revenues. Intermedia's results for the fourth quarter of 2000 show that revenue from data transfer and web hosting grew at approximately 14 percent per quarter during the year 2000. At the same time, Intermedia's revenues in the area of voice and local access actually declined.[77] Intermedia attributes this decline in voice and local revenue to its earlier reliance on reciprocal compensation. Specifically, total revenues fell from

75. "XO Gets Financing into 2003, Shares Surge," *Reuters*, (April 26, 2001).
76. See Table 3 and Appendix 2.

$261.7 million to $247.4 million between the first and second quarters of 2000. Revenues net of reciprocal compensation increased during this time period, rising from $229.8 million to $239.4.[78] Clearly, Intermedia made a strategic error in relying too heavily on reciprocal compensation revenues, but it made a wise decision in targeting data exchange and web hosting as a large portion of its business. The incremental value of Intermedia to the market—and to MCI WorldCom—lies largely in its web hosting business.

## VI. WHO FALTERED, AND WHY

Time Warner acquired GST after GST filed for chapter 11 bankruptcy protection. ICG Communications also filed for chapter 11 protection shortly thereafter.[79] Recently, several other CLECs have filed for bankruptcy protection (see Table 3), and 10 publicly traded CLECs have experienced negative revenue growth since the fourth quarter of 1999. The most common problems that have plagued these unsuccessful CLECs have been over expansion -- leading to poor quality, reliance on resale, and reliance on reciprocal compensation.

### A. ICG Communications, Inc.

ICG Communications, Inc. filed for chapter 11 bankruptcy in September 2000.[80] Shortly before this event, ICG's stock value had declined 60 percent, and the company reduced its expectations of revenue for the year 2000, citing customer service problems

77. Downloaded from Intermedia at (http://www.intermedia.com/company/press/release.cfm?releaseid=400).
78. "Telecom Services—CLECs," *Credit Suisse First Boston,* (April 11, 2001), at 11.
79. ICG Files for Bankruptcy, *supra* note 7, at 1B.
80. *Id.*

as a reason for the revenue shortfall.[81] When asked to comment on ICG's recent performance, Andrew Morley of Level 3 Communications stated, "you need to know who your customers are, know why you serve them and remember they are your No. 1 priority. That's where I think ICG took its eye off the ball."[82] In explaining why ICG had problems with customer service, analyst Dave Heger of A.G. Edwards said that "the company put in all [those] lines and a lot of them must not have been working right. Now you have major customers saying they may pull their business."[83] Thus, industry sources believe that over expansion was a major problem in the case of ICG, leading to poor product quality, and eventually lost business.

These views of ICG's problems are supported by data on its revenue and access-line growth from 1998 to the third quarter of 2000. During this time period, ICG's average revenue growth was approximately 9.1 percent per quarter, while average line access lines growth was approximately 19 percent per quarter. ICG was extracting less money for each access line in its network over this time period.[84] This was typical of the CLECs in general, as revenue per line for even the highest performing CLECs decreased approximately 3 to 4 percent per quarter from 1999 to 2001.[85] ICG suffered a 56 percent decline in revenue per line over this time period, confirming that over expansion was the principal cause of ICG's problems. The more successful CLECs suffered much smaller

81. KW Meyers, "ICG Troubles Offer Lesson for the Industry," *Denver Rocky Mountain News*, (September 25, 2000), 11B.

82. *Id.*

83. Heather Draper, "ICG's Tumble a Wake-up Call to Telecom Firms," *Denver Rocky Mountain News*, (September 24, 2000), 1G.

84. Revenue figures are obtained from *U.S. Securities and Exchange Commission*, Forms 10-Q and 10-K.

85. See "Telecom Services—CLECs," *Credit Suisse First Boston*, (June 5, 2000), at 15 and "Telecom Services—CLECs," *Credit Suisse First Boston*, (June 5, 2001), at 15.

declines in revenues per line, and one -- Allegiance -- actually experienced an increase in revenues per line over this period.

## B. CTC Communications

Another CLEC that relies heavily on resale is CTC Communications. CTC provides local and long distance telephone, and high-speed data services,[86] and it leases 97 percent of its network lines through resale agreements. CTC has been very aggressive in adding capital assets. In the first quarter of 1998 CTC reported only $1.7 million in capital assets, but it expanded steadily to over $195 million in assets by the fourth quarter of 2000. During the period, revenues were rising steadily from $12.8 million to $62.3 million. Thus, capital assets were growing at about 43 percent per quarter, while revenues were growing at about 14 percent per quarter. Given the difference in the growth rate of assets over revenues, CTC has now revised its business model, adding new lines only after it has signed on new customers.[87] The revised plan was announced at a time when CTC's stock price had fallen from a high of over $50 to around $5.

Over-expansion is clearly a major source of CTC's problems, and this is obviously one of the reasons for its new deployment strategy, but another problem is its reliance on resale. A simple resale strategy has caused serious problems for many CLECs, most notably AT&T. If AT&T finds resale unprofitable, then there is no reason to think that a smaller firm, such as CTC, would be able to build a sustainable business by reselling ILEC services.

86. CTC Communications Corp., *U.S. Securities and Exchange Commission*, Form 10-K, (June 29, 2000), at 1.

87. Too Many Lines, *supra* note 27, at 20.

## C. Teligent

On May 21, 2001 Teligent filed for Chapter 11 bankruptcy protection. Trading of the firm's stock was halted on NASDAQ at 56 cents per share. Fourteen months prior to the bankruptcy filing Teligent's stock was trading at nearly $100 per share, and the firm was seen as potentially one of the most powerful CLECs in the industry.[88] The sharp drop in its stock price left Teligent unable to secure sufficient funding to remain solvent. The crash in Teligent's stock price, and the subsequent financial squeeze left the company over $1.6 billion in debt, more than $800 million of which derived from year 2000 operations.[89]

The reason for Teligent's failure was over-expansion, but of a type different from most other CLECs. Teligent's business model was to provide voice and data services over a fixed wireless system, thus avoiding the last mile access problem that plagued so many CLECs. A fixed wireless system consists of a rooftop antenna that transmits a radio signal to a receiver outside of the building. Data is then transferred to and from the end user to the telecom's optical network over the air rather than through copper wires. This strategy avoids the last mile access problem, but it can be very costly.[90]

Teligent ran into problems when it tried to build networks in large numbers of new markets all at once and relied too heavily on debt financing for the necessary capital expenditures. Many of Teligent's new markets might have eventually been very profitable because it would have offered a service far different from that of the ILECs, but its poor debt management resulted in a financial squeeze and subsequent bankruptcy.

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88. Yuki Noguchi, "Teligent Files for Chapter 11 Protection; Move Adds to Doubt On Broadband's Role," *Washington Post*, (May 22, 2001), at E1.

89. Elizabeth Douglas, "Teligent Is Latest Telecom to Fail, File for Chapter 11," *Los Angeles Times*, (May 22, 2001) at Business, Part3, 3.

The lesson to be taken from Teligent's failure is that building local networks takes time, and that markets must be added at reasonable rates so that profits from existing markets can ease the cost of adding new markets thereby avoiding a drain of capital reserves.

### D. NorthPoint Communications

Before declaring bankruptcy and then selling its network assets to AT&T in March 2001, NorthPoint Communications was one of the largest DSL providers in the nation with approximately 100,000 customers. NorthPoint's business model was to be a be a wholesale supplier of DSL, using ILEC UNEs and selling the service to Internet service providers who in turn enrolled the end users.[91] This business model may have made sense to the extent that NorthPoint could have captured a better margin by being the initial producer of the service while avoiding the costs of retailing. Unfortunately, the bursting of the Internet bubble in the stock market led to financial constraints on NorthPoint's clients, such as Telocity. As a result, NorthPoint had to revise downward its third quarter 2000 earnings statement, reducing reported revenue from $30 million to $24 million because about 30 percent of NorthPoint's clients where delinquent in paying their bills.[92]

After the revised earnings statement, Verizon promptly cancelled a deal to purchase NorthPoint due the company's financial disarray.[93] By the time the Verizon deal had fallen through, the capital markets had sharply reduced the flow of funds to the failing Internet firms. NorthPoint was consequently left with a partially completed network and a huge shortfall of capital funding because it had not pursued additional

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90. *Id.*

91. Elizabeth Douglas, "100,000 Subscribers of NorthPoint DSL Face Disconnection," *Los Angeles Times*, (March 28, 2001) at C3 ("NorthPoint DSL Face Disconnection").

financing, counting on the Verizon deal to be completed.[94] NorthPoint was forced to file for bankruptcy protection, and eventually to sell its network elements to AT&T.

Interestingly enough, in the AT&T deal with NorthPoint, AT&T required NorthPoint to suspend operations, ensuring that it would not have to honor contracts with NorthPoint's ISP clients. AT&T stated that it preferred to offer the entire service itself, rather than acting as a wholesale agent of DSL service.[95] By providing the entire DSL service itself, AT&T was avoiding the problem that brought NorthPoint down, namely the failure of Internet service providers to pay their bills.

### E. Focal Communications

In 1997, Focal Communications derived over 80 percent of its total revenues from reciprocal compensation. With uncertainty looming over a possible FCC decision to reduce reciprocal compensation, Focal was forced reduce its dependence on these revenues. Focal reduced its reliance on reciprocal compensation to 30 percent of revenues in the year 2000, and hopes to reduce this figure to 15 percent of revenues in 2001. These efforts were not sufficient to keep its stock price from declining by 80 percent in the first half of the year 2000 as the financial markets reflected a continuing concern over cash flow problems stemming from reliance on reciprocal compensation.[96]

Other companies have recognized the folly of building a business strategy on the arbitrage opportunities presented by reciprocal compensation. For example, Intermedia Communications reduced its expectations of revenue in 2000 as a result of expected

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92. Peter S. Goodman, "Verizon Terminates Deal to Buy Stake in NorthPoint," *Washington Post*, (November 30, 2000), at E9 ("Verizon Terminates Deal").
93. NorthPoint DLS Face Disconnection, *supra* note 91, at C3.
94. Verizon Terminates Deal, *supra* note 92, at E9
95. NorthPoint DLS Face Disconnection, *supra* note 91, at C3.
96. Disconnect for Upstart, *supra* note 40, at 1.

changes in reciprocal compensation fees.[97] The expected change in fees came as a result of state court rulings recommending the reduction of reciprocal compensation rates. This reduction in expected revenues from reciprocal compensation was cited as one reason why Broadwing abandoned its negotiations to buy Intermedia. As a result, the value of Intermedia's shares fell 14 percent in one day.[98]

Possibly a bigger problem than the *direct* loss of revenues from reciprocal compensation is the *indirect* loss of revenues from poor network design resulting from reliance on reciprocal compensation revenues. Focal initially designed its network around extracting reciprocal compensation revenues. As a result, 100 percent of Focal's access lines were UNE lines, while the industry average was approximately 33 percent UNE and 36 percent on-net in the second quarter of 2000.[99] Focal's CLEC competitors were adding their own components and building their own lines while Focal continued to lease UNEs from the ILECs. This is a poor business strategy because Focal is even now unable to offer product quality different from the ILECs while some CLECs are able to offer superior service. In the long term, customers are more likely to prefer a CLEC to an ILEC if the CLEC can offer better service, lower cost, or a combination of the two. Focal is unable to offer service or cost improvements over the ILECs, because Focal's entire network is based on UNEs.

97. Intermedia Communications Inc., *U.S. Securities and Exchange Commission*, Form 10Q, (November 14, 2000), 14.

98. Kris Hundley, "Intermedia Revenues Come Up Short," *St. Petersburg Times*, (July 12, 2000), E1.

99. "Telecom Services—CLECs," *Credit Suisse First Boston*, (Sept. 12, 2000), at 19.

## VII. Conclusion

The empirical analysis reported in Section V and the snapshots of the successful and unsuccessful CLECs in Section VI point in the same direction. Those entrants who deliberately built out their own networks, carefully analyzing competition and consumer demand prior to entry, were able to increase revenues and continue to attract capital. Several of the more successful CLECs combined resale and the leasing of unbundled network elements with the construction of their own networks, but none of these firms rely exclusively on UNE or resale, and these firms added more facilities based elements over time in order to improve upon the product the ILECs offer. The fact that some firms, such as McLeod and Allegiance, were able to employ a resale and/or UNE strategy as part of their business plan provides strong refutation that the large incumbent telephone companies are in some way responsible for the recent spate of CLEC failures.

Since December 1999, the CLEC share of the nation's access lines has expanded rapidly. As of December 2000, the CLECs had 8.5 percent of the country's access lines and were growing rapidly. Unfortunately, many of the entrants were not able to survive the large decline in the market for high-technology equity shares that began in March 2000. These companies generally had faulty business plans that were exposed when a declining stock market severely reduced their ability to raise capital. The ensuing shake-out of entrants has been described as "only natural" by the chairman and CEO of Allegiance, who pointed out that the overheated capital markets of 1999 and early 2000 created an environment in which "no business plan [was] to weak or management team to

inexperienced to get funded."[100] Even industry veterans agree that the recent spate of CLEC failures is due to their own failings.

Virtually every exercise in deregulation or market liberalization leads to a wave of entry followed by a wave of bankruptcies. This was the experience in trucking and airline deregulation—two industries in which technology has been rather stagnant. Given the rapid changes in technology in telecommunications and the fact that there are few historical models of competition in local telephone service, the likelihood of failed entry is surely much greater in this market. Nevertheless, the good news is that some entrants are succeeding and growing and that local markets are steadily become more competitive.

100."CLEC Representatives Have Doubts About FCC's 'Recp Comp' Order," *TR Daily*, May 15, 2001.

## APPENDIX 1. ECONOMETRIC ANALYSIS OF CLECS

### A. Analysis of Individual, Publicly Traded CLECs

To analyze the performance of individual CLECs and the industry as a whole, the ideal model would attempt to analyze the determinants of access line and revenue growth. Unfortunately, the only data available on the individual CLEC networks are the data that the CLECs supply themselves. Obviously, the incentive here is for strong CLECs to publish fairly detailed data on their networks, while the weaker firms report little, if any, line numbers. For this reason, I formulate a model of CLEC performance that can be applied to the publicly available data. Specifically, I am interested in the rate at which CLECs convert investments in assets into revenues and the importance of the CLEC's network design and choice of customers—business or residential— in that conversion process.

To be specific, I begin by differentiating a specific CLEC from others with an index, *i*. I also refer to time periods in quarters with the index *t*. I define the logarithm of a firm's revenues in time period *t* as $lrev_t$. Similarly, I define the logarithm of a CLEC's capital assets in time period *t* as $lcap_t$. Letting *N* denote the total number of CLECs in the analysis, I create dummy variables—that is, variables taking on the values of 1 or 0, to indicate the specific CLEC that the data points correspond to. I write the *N-1* dummy variables as follows:

$CLEC_{t1}$ = 1 if the data correspond to the 1st CLEC, 0 otherwise

$CLEC_{t2}$ = 1 if the data correspond to the 2nd CLEC, 0 otherwise

$CLEC_{tN-2}$ = 1 if the data correspond to CLEC #N-2, 0 otherwise

$CLEC_{tN-1}$ = 1 if the data correspond to CLEC #N-1, 0 otherwise

The first equation estimated is:

$$lrev_t = a_0 + a_1 lcap_{t-1} \cdot CLEC_{(t-1)1} + a_2 lcap_{t-1} \cdot CLEC2_{(t-1)2} + \ldots + a_{N-2} lcap_{t-1} \cdot CLEC_{(t-1)N-2} + a_{N-1} lcap_{t-1} \cdot CLEC_{(t-1)N-1} + u_t \quad (1)$$

In equation 1, $a_0, a_1, a_2, \ldots a_{N-2}, a_{N-1}$ are the parameters to be estimated and $u_t$ is an error term that is drawn from a random sample in each quarter. Equation 1 allows for the possibility that each CLEC has a different rate of converting capital assets into revenues. An efficient CLEC will have a rapid rate of conversion and hence a large, positive regression coefficient. For example, suppose that the 3rd CLEC is particularly efficient. In this case, $a_3$ will be a large positive number. On the other hand, if the 10th CLEC is inefficient, then $a_{10}$ would be close to zero, or even negative.

**B. Analysis of CLEC Business Models**

The above analysis compares the performance of one CLEC to another, but gives little, if any, insight to the business practices that lead to a CLEC's eventual success or failure. To measure the effects of business strategy on performance, I estimated another regression, this time grouping the CLECs based on network platform, customer base, and use of reciprocal compensation. I begin by defining a number of dummy variables for quarter $t$, shown in Table A-1.